

I claim:

1. A wireless object counter comprising:

a transmitter circuit comprising:

a continuously cycling microcomputer;

a continuously operating clock circuit connected to said
5 microcomputer;

an infrared generator producing a burst of a predetermined
minimum number of infrared pulses as a beam during a
predetermined time period;

and said microcomputer controlling said infrared generator
10 to produce a burst of the predetermined minimum number
of infrared pulses as a beam during the predetermined
time period;

a receiver circuit comprising:

a microcomputer;

15 a continuously operating clock circuit connected to said
microcomputer, said clock circuit having the same
frequency as said clock circuit of said transmitter
circuit and synchronized with said clock circuit of
said transmitter circuit so that activations of said
microcomputer of said transmitter circuit and said
20 microcomputer of said receiver circuit are synchronized
when said microcomputer of said receiver circuit is to
be activated for a cycle of operation;

an infrared receiver aligned with the beam of each of the
25 bursts of at least the predetermined minimum number of

infrared pulses for receiving the infrared pulses of
each of the bursts of the infrared pulses, said
infrared receiver being spaced from said infrared
generator to provide a path therebetween along which
objects to be counted move;

30

said microcomputer rendering said infrared receiver
effective a predetermined time period before each of
the bursts of at least the predetermined minimum number
of the infrared pulses is transmitted from said
infrared generator when said microcomputer of said
35 receiver circuit is activated for a cycle of operation;
said infrared receiver communicating with said microcomputer
if said infrared receiver receives the burst of at
least the predetermined minimum number of the infrared
pulses during a cycle of operation of said
40 microcomputer;

a counter in said microcomputer for counting each time that
the beam of the pulses of each of the bursts of at
least the predetermined minimum number of the infrared
pulses is interrupted by an object to be counted;

45

and said microcomputer ceasing to cycle for a predetermined
period of time when said infrared receiver fails to
receive one of the bursts of at least the predetermined
minimum number of the infrared pulses for a
predetermined number of cycles of operation of said
50 microcomputer;

a first battery for powering said transmitter circuit;
and a second battery for powering said receiver circuit.

2. The wireless object counter according to claim 1 comprising
means for selecting one of at least two different power levels
for energizing said infrared generator of said transmitter
circuit.

3. The wireless object counter according to claim 2 in which
each of the predetermined time periods of each cycle of operation
of said microcomputer of said transmitter circuit in which at
least the predetermined minimum number of the infrared pulses is
produced is a constant.

4. The wireless object counter according to claim 3 in which
said microcomputer of said receiver circuit is activated a
predetermined time period before said microcomputer of said
transmitter circuit is activated.

5. The wireless object counter according to claim 4 comprising
means for energizing said infrared generator from said
microcomputer of said transmitter circuit during each activation
of said microcomputer of said transmitter circuit.

6. The wireless object counter according to claim 5 in which:
said microcomputer of said receiver circuit is activated for at
least one cycle of operation after ceasing to cycle for the
predetermined period of time to determine if said infrared
receiver receives one of the bursts of at least the
predetermined minimum number of the infrared pulses during

the at least one cycle of operation that said microcomputer
of said receiver circuit is activated;

10 said microcomputer of said receiver circuit ceasing to cycle
again for a predetermined period of time if said infrared
receiver fails to receive one of the bursts of at least the
predetermined minimum number of the infrared pulses during
the at least one cycle of operation that said microcomputer
is activated;

15 and said microcomputer of said receiver circuit continuing to
cycle if said infrared receiver receives one of the bursts
of at least the predetermined minimum number of the infrared
pulses during the at least one cycle of operation that said
microcomputer is activated until said infrared receiver
fails to receive one of the bursts of the infrared pulses
for a predetermined number of cycles of operation of said
microcomputer of said receiver circuit.

7. The wireless object counter according to claim 6 comprising
a display for displaying as a count of the number of objects
counted only the first count of any plurality of successive
counts received by said counter in said microcomputer of said
5 receiver circuit until there is an interruption of the successive
counts.

8. The wireless object counter according to claim 7 in which
said infrared generator is a LED.

9. The wireless object counter according to claim 2 in which
said microcomputer of said receiver circuit is activated a

predetermined time period before said microcomputer of said transmitter circuit is activated.

10. The wireless object counter according to claim 9 comprising means for energizing said infrared generator from said microcomputer of said transmitter circuit during each activation of said microcomputer of said transmitter circuit.

11. The wireless object counter according to claim 10 in which:
said microcomputer of said receiver circuit is activated for at least one cycle of operation after ceasing to cycle for the predetermined period of time to determine if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer of said receiver circuit is activated;

5
said microcomputer of said receiver circuit ceasing to cycle again for a predetermined period of time if said infrared receiver fails to receive one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated;

10
15 and said microcomputer of said receiver circuit continuing to cycle if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated until said infrared receiver
fails to receive one of the bursts of the infrared pulses

for a predetermined number of cycles of operation of said microcomputer of said receiver circuit.

12. The wireless object counter according to claim 11 comprising a display for displaying as a count of the number of objects counted only the first count of any plurality of successive counts received by said counter in said microcomputer of said 5 receiver circuit until there is an interruption of the successive counts.

13. The wireless object counter according to claim 12 in which said infrared generator is a LED.

14. The wireless object counter according to claim 2 in which: said microcomputer of said receiver circuit is activated for at least one cycle of operation after ceasing to cycle for the predetermined period of time to determine if said infrared 5 receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer of said receiver circuit is activated;

said microcomputer of said receiver circuit ceasing to cycle again for a predetermined period of time if said infrared receiver fails to receive one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated;

15 and said microcomputer of said receiver circuit continuing to cycle if said infrared receiver receives one of the bursts

of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated until said infrared receiver fails to receive one of the bursts of the infrared pulses for a predetermined number of cycles of operation of said microcomputer of said receiver circuit.

20

15. The wireless object counter according to claim 1 in which said microcomputer of said receiver circuit is activated a predetermined time period before said microcomputer of said transmitter circuit is activated.

16. The wireless object counter according to claim 15 comprising means for energizing said infrared generator from said microcomputer of said transmitter circuit during each activation of said microcomputer of said transmitter circuit.

17. The wireless object counter according to claim 16 in which: said microcomputer of said receiver circuit is activated for at

5

least one cycle of operation after ceasing to cycle for the predetermined period of time to determine if said infrared receiver receives one of the bursts of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer of said receiver circuit is activated;

said microcomputer of said receiver circuit ceasing to cycle

10

again for a predetermined period of time if said infrared receiver fails to receive one of the bursts of at least the predetermined minimum number of the infrared pulses during

the at least one cycle of operation that said microcomputer
is activated;

15 and said microcomputer of said receiver circuit continuing to
cycle if said infrared receiver receives one of the bursts
of at least the predetermined minimum number of the infrared
pulses during the at least one cycle of operation that said
microcomputer is activated until said infrared receiver
fails to receive one of the bursts of the infrared pulses
for a predetermined number of cycles of operation of said
microcomputer of said receiver circuit.

20 18. The wireless object counter according to claim 1 in which:
said microcomputer of said receiver circuit is activated for at
least one cycle of operation after ceasing to cycle for the
predetermined period of time to determine if said infrared
5 receiver receives one of the bursts of at least the
predetermined minimum number of the infrared pulses during
the at least one cycle of operation that said microcomputer
of said receiver circuit is activated;
said microcomputer of said receiver circuit ceasing to cycle
10 again for a predetermined period of time if said infrared
receiver fails to receive one of the bursts of at least the
predetermined minimum number of the infrared pulses during
the at least one cycle of operation that said microcomputer
is activated;

15 and said microcomputer of said receiver circuit continuing to
cycle if said infrared receiver receives one of the bursts

of at least the predetermined minimum number of the infrared pulses during the at least one cycle of operation that said microcomputer is activated until said infrared receiver
20 fails to receive one of the bursts of the infrared pulses for a predetermined number of cycles of operation of said microcomputer of said receiver circuit.

19. The wireless object counter according to claim 1 in which each of the predetermined time periods of each cycle of operation of said microcomputer of said transmitter circuit in which at least the predetermined minimum number of the infrared pulses is
5 produced is a constant.

20. The wireless object counter according to claim 1 comprising a display for displaying as a count of the number of objects counted only the first count of any plurality of successive counts received by said counter in said microcomputer of said
5 receiver circuit until there is an interruption of the successive counts.

21. The wireless object counter according to claim 1 in which said infrared generator is a LED.

22. A method of wireless counting of objects moving along a predetermined path comprising:

transmitting a beam of at least a predetermined minimum number of infrared pulses, under control of a continuously cycling
5 first battery powered microcomputer having a continuously operating clock circuit, across the predetermined path during each cycle of operation of the continuously cycling

first battery powered microcomputer so that the beam of at least the predetermined minimum number of infrared pulses will be blocked by an object moving along the predetermined path;

receiving the beam of at least the predetermined minimum number of infrared pulses at an infrared receiver disposed on the opposite side of the predetermined path unless the beam of at least the predetermined minimum number of infrared pulses is blocked, the receiver being under the control of a second battery powered microcomputer having a continuously operating clock circuit of the same frequency as the clock circuit of the first battery powered microcomputer during each cycle of operation of the second battery powered microcomputer, and the receiver being activated by the second battery powered microcomputer prior to transmission of the beam of at least the predetermined minimum number of infrared pulses;

counting each time that the receiver does not receive the beam of at least the predetermined minimum number of infrared pulses and storing each count in the second battery powered microcomputer;

and synchronizing the second battery powered microcomputer with the first battery powered microcomputer each time that the second battery powered microcomputer is to be activated for a cycle of operation.

23. The method according to claim 22 comprising displaying a count of the number of objects by adding only a count of one to a count display irrespective of the number of consecutive cycles of operation of the second battery powered microcomputer that the 5 infrared receiver does not receive the beam of at least the predetermined minimum number of infrared pulses.
24. A method of wireless counting of objects moving along a predetermined path comprising:
- transmitting a beam of at least a predetermined minimum number of infrared pulses, under control of a continuously cycling 5 first battery powered microcomputer having a continuously operating clock circuit, across the predetermined path during each cycle of operation of the continuously cycling first battery powered microcomputer so that the beam of at least the predetermined minimum number of infrared pulses 10 will be blocked by an object moving along the predetermined path;
- receiving the beam of at least the predetermined minimum number of infrared pulses at an infrared receiver disposed on the opposite side of the predetermined path unless the beam of 15 at least the predetermined minimum number of infrared pulses is blocked, the receiver being under the control of a second battery powered microcomputer having a continuously operating clock circuit of the same frequency as the clock circuit of the first battery powered microcomputer during 20 each cycle of operation of the second battery powered

microcomputer, and the receiver being activated by the second battery powered microcomputer prior to transmission of the beam of at least the predetermined minimum number of infrared pulses;

25 counting each time that the receiver does not receive the beam of at least the predetermined minimum number of infrared pulses and storing each count in the second battery powered microcomputer;

stopping activation of the second battery powered microcomputer

30 for a predetermined period of time after the receiver has not received the beam of at least the predetermined minimum number of infrared pulses for a predetermined period of time;

activating the second battery powered microcomputer for a

35 predetermined period of time after the second battery powered microcomputer has been stopped for the predetermined period of time;

continuing to stop the second battery powered microcomputer after each of its activations for a predetermined period of time

40 if the receiver has not received the beam of at least the predetermined minimum number of infrared pulses during each activation of the second battery powered microcomputer for the predetermined period of time;

and synchronizing the second battery powered microcomputer with

45 the first battery powered microcomputer each time that the second battery powered microcomputer is to be activated

irrespective of whether the second battery powered microcomputer has been inactivated for one or more cycles of operation of the first battery powered microcomputer.

25. The method according to claim 24 comprising displaying a count of the number of objects by adding only a count of one to a count display irrespective of the number of consecutive cycles of operation of the second battery powered microcomputer that the infrared receiver does not receive the beam of at least the predetermined minimum number of infrared pulses.
5
26. The method according to claim 25 in which each predetermined period of time that the second battery powered microcomputer is stopped is a constant.
27. The method according to claim 26 in which the predetermined period of time that the receiver has not received the beam of at least the predetermined minimum number of infrared pulses is a constant.
28. The method according to claim 27 in which each predetermined period of time that the second battery powered microcomputer is stopped is a constant.
29. The method according to claim 28 in which the predetermined period of time that the receiver has not received the beam of at least the predetermined minimum number of infrared pulses is a constant.
30. The method according to claim 24 in which the predetermined period of time that the receiver has not received the beam of at

least the predetermined minimum number of infrared pulses is a constant.